



EPA and DWP Begin Investigating Groundwater Contamination in the San Fernando Valley



Los Angeles Department
of Water and Power

LOS ANGELES COUNTY, CALIFORNIA

FACT SHEET # 1

MARCH 1988

INTRODUCTION

This fact sheet, prepared by the U.S. Environmental Protection Agency (EPA) and the Los Angeles Department of Water and Power (DWP), is intended to inform you about the investigation and cleanup of *groundwater* contamination in the San Fernando Valley Basin.

In July 1987, EPA signed a cooperative agreement with DWP allowing the city to spend federal money to define the extent of groundwater contamination in four areas of the San Fernando Valley. As neither agency has the resources or legal authority to conduct the long-term investigation and cleanup independently, EPA and DWP agreed

to share project responsibilities and capitalize on each agency's respective strengths. EPA, however, has the overall lead responsibility for coordination of the *Superfund* project.

Italicized Terms are Defined in the Glossary on Page 8



The San Fernando Valley Groundwater Basin represents an important source of drinking water for Los Angeles, Burbank, Glendale and La Crescenta, serving approximately 600,000 residents.

BACKGROUND

The Importance of the San Fernando Valley Groundwater Basin

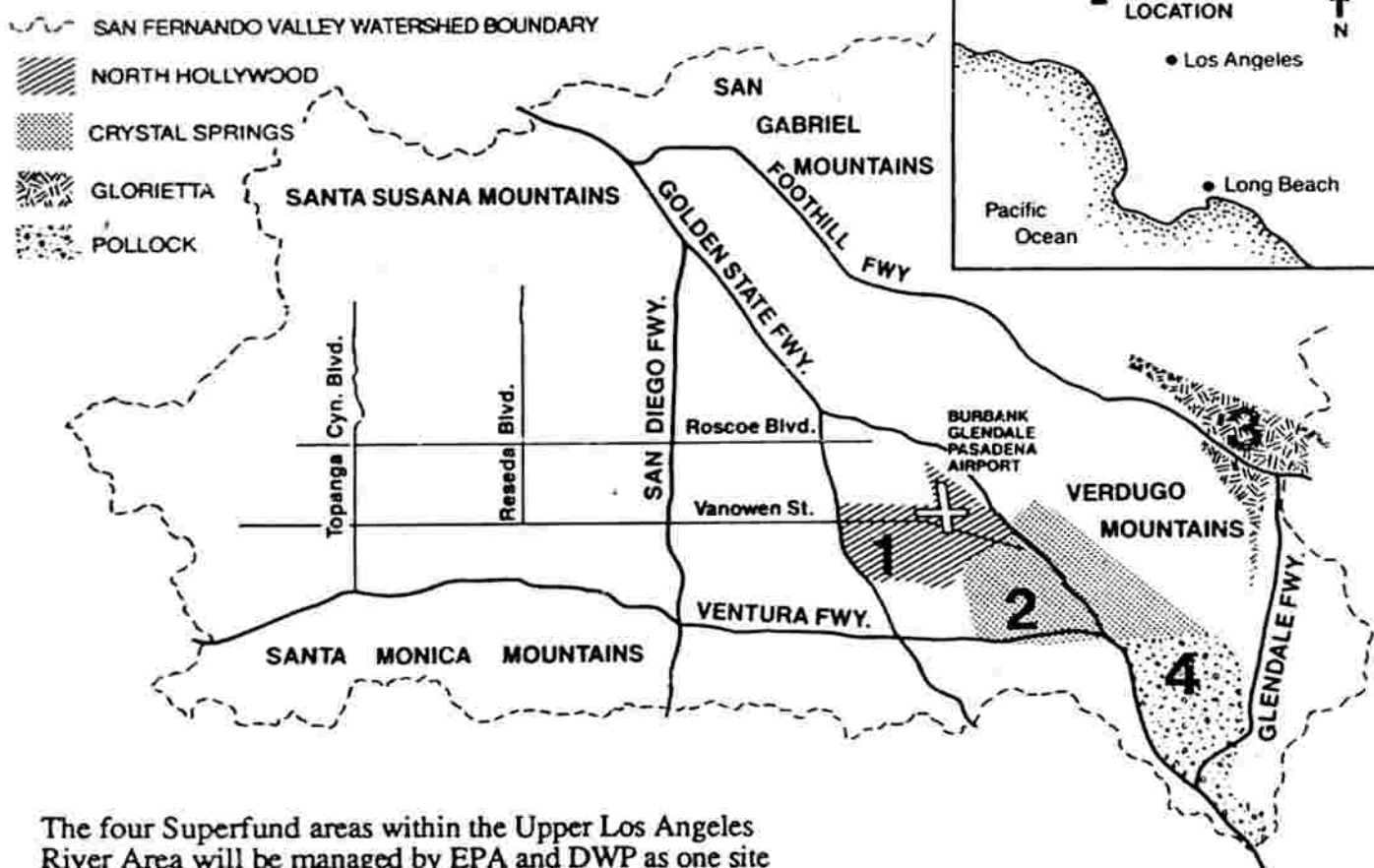
In June 1986, at the request of DWP and the California Department of Health Services (DHS), EPA designated four well fields within the San Fernando and Verdugo Groundwater Basins as *National Priorities List (NPL)* hazardous waste sites. Industrial chemicals have been detected in the groundwater of these areas. For the purpose of this study, the two groundwater basins will

be referred to collectively as the San Fernando Valley Groundwater Basin. Although each well field is listed separately on the NPL, EPA and DWP are managing the investigation of the four sites as if they were one single, but very large, site.

The Basin represents an important source of drinking water for Los Angeles, Burbank, Glendale, and La Crescenta, and provides these communities with enough water to serve approximately 600,000 residents.

The Basin, made up of many layers of clay, sand and gravel, naturally contains large quantities of water that is drawn from wells located throughout the Valley. Groundwater from this *aquifer* is used for countless commercial, industrial and residential purposes, and is especially important during years of drought. The groundwater that has become contaminated is now difficult to replace since Southern California has lost a substantial amount of Colorado River water to the State of Arizona.

EPA Superfund Areas



The four Superfund areas within the Upper Los Angeles River Area will be managed by EPA and DWP as one site during the Superfund project.

Groundwater Contamination Detected

In late 1979, as a result of the passage of Assembly Bill 1803, DHS requested that all major water purveyors using groundwater conduct tests for the presence of certain industrial chemicals as part of a statewide groundwater quality surveillance effort. These initial tests, completed in spring 1980, indicated that *hazardous substances* such as *trichloroethylene (TCE)* and *perchloroethylene (PCE)*, were present in concentrations above *State Action Levels* in a number of water production wells in the San Fernando Valley.

For years, TGE and PCE were widely used for machinery degreasing, dry cleaning and metal plating. Some groundwater contamination currently affecting the Basin's water supply can be traced back to the period between 1940-1967 when the disposal of large quantities of chemical wastes was unregulated throughout the Valley.

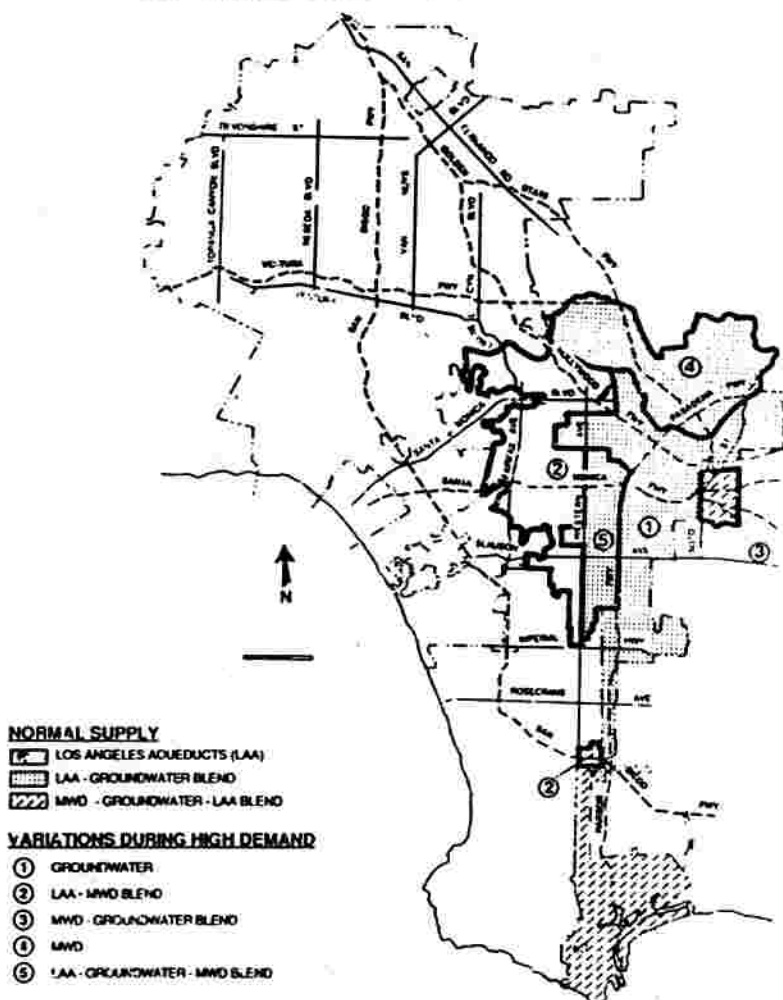
DHS has set temporary guidelines, or action levels, for contaminants in drinking water 5 *parts per billion (ppb)* and 4 ppb for TCE and PCE, respectively. The federal *Maximum Contaminant Level (MCL)* for TCE is also 5 ppb.

The primary contaminant, TCE, was found at concentrations exceeding the State action level in 47 of the Valley's 120 production wells. In addition, PCE levels above State action level were present in 39 Valley wells.

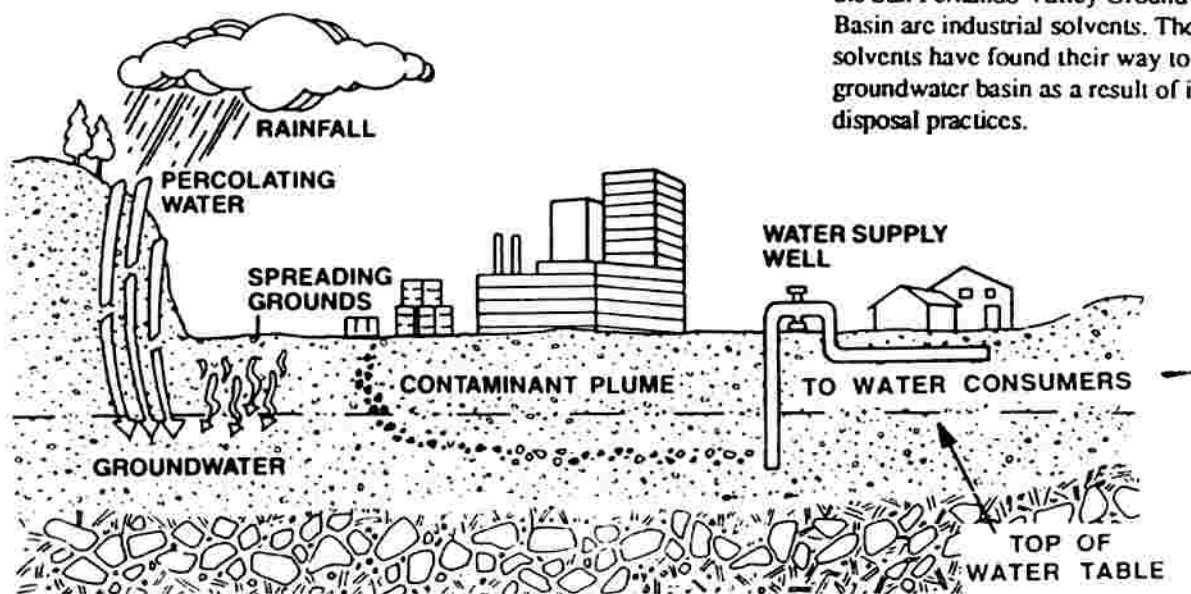
Wells containing TCE and PCE concentrations above the State guidelines have been dealt with in various ways by the different communities. At present, the City of Los Angeles addresses well contamination

by either providing alternate sources of drinking water, or shutting down heavily contaminated wells and blending contaminated water from other sources to achieve TCE and PCE concentrations below State action levels. However, if well concentrations of TCE and PCE exceed 40 ppb, the affected well is removed from the blending program and taken out of service. Other communities have turned to the Metropolitan Water District of Southern California for surface water to augment their supplies.

WATER SOURCE DISTRIBUTION MAP
Los Angeles Department of Water & Power



The City of San Fernando uses groundwater from the Sylmar Groundwater Basin. San Fernando industry, however, is geographically located above portions of the San Fernando Valley Groundwater Basin, and consequently may have contributed to the Basin contamination. For this reason, the Public Works Department of San Fernando has been working with other cities in the Valley to resolve the contamination problem.



The primary contaminants found in the San Fernando Valley Groundwater Basin are industrial solvents. These solvents have found their way to the groundwater basin as a result of improper disposal practices.

Agency Involvement

In 1981, DWP and the Southern California Association of Governments (SCAG) embarked upon a two-year, EPA-funded study to assess groundwater conditions in the San Fernando Valley. The investigation resulted in a report entitled the "Groundwater Quality Management Plan-San Fernando Valley." The

report concluded that the Basin was being contaminated by multiple sources and recommended methods to reduce present and future contamination.

The report recommended eight specific groundwater management strategies including the regulation of private disposal systems,

storage tanks, sumps and pipelines. Other recommendations called for programs to deal with small quantity waste generators, landfill regulations, groundwater monitoring, and aquifer management and groundwater treatment. These measures are currently being implemented under direction of a 12-member Interagency Coordinating Committee.

WHAT IS SUPERFUND?

In 1980, Congress enacted the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) to respond directly to hazardous waste problems that pose a threat or potential threat to public health and the environment. CERCLA established a trust fund (Superfund), administered by EPA, to finance the investigation and cleanup of these hazardous waste sites. Superfund monies are generated primarily through a tax on chemical and petroleum industries and are used when parties responsible for contaminating

the site are unknown, unwilling, or incapable of resolving the environmental problem.

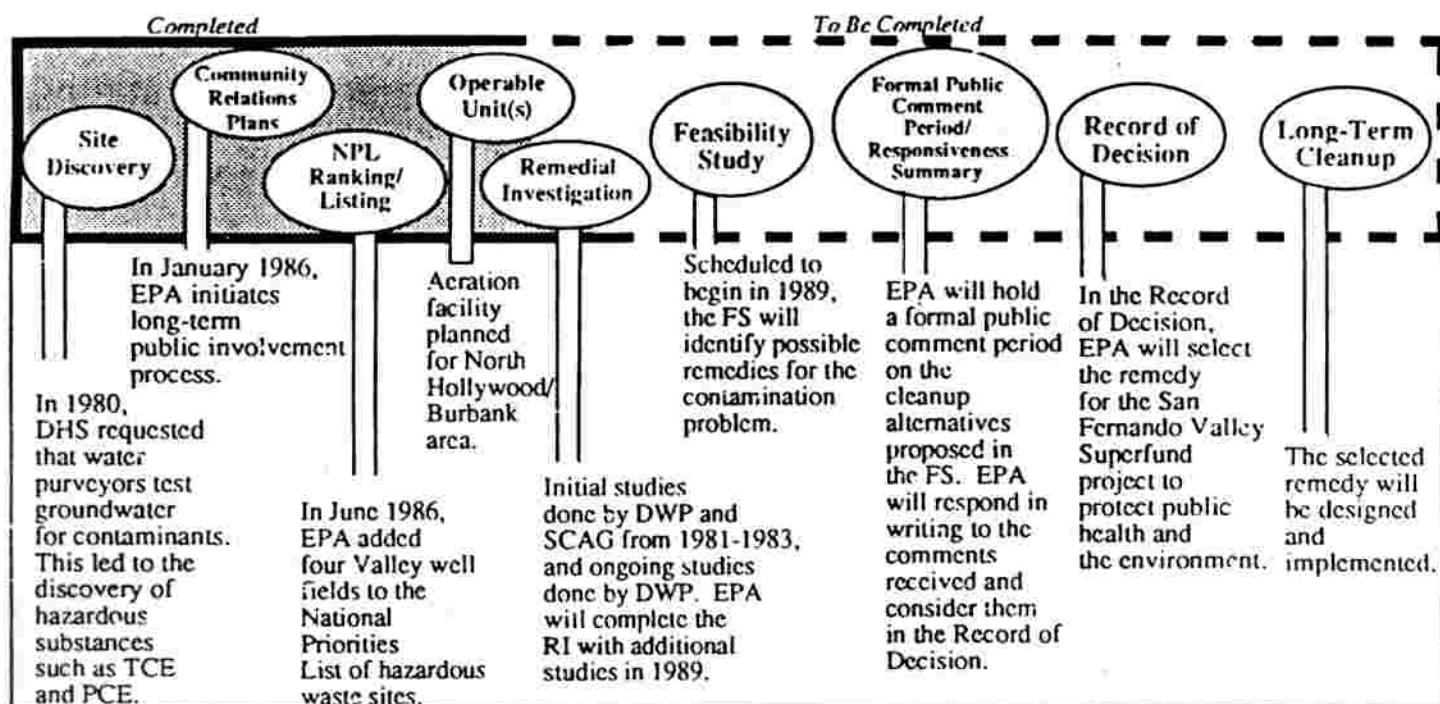
In October 1986, Congress passed the Superfund Amendments and Reauthorization Act (SARA) and added \$8.5 Billion to Superfund program revenues over the next five years and strengthened EPA's authority to conduct short- and long-term enforcement actions. SARA also strengthened State involvement in the cleanup process and EPA's commitment to research and development, health assessments, and public participation.

The process of investigating site contamination and examining possible cleanup remedies under SARA is done with a *Remedial Investigation/Feasibility Study (RI/FS)*.

In the Remedial Investigation, DWP will collect data to define the problem. In the Feasibility Study, EPA will focus on evaluating cleanup alternatives.

The completed RI/FS report will be available for public review and comment.

SAN FERNANDO VALLEY SUPERFUND PROCESS



Remedial Investigation

The major goal of the Remedial Investigation is to identify the sources, pathways, and receptors of the contaminants and to characterize the nature and extent of the public health and environmental problems presented by the contamination. Consequently, the investigation involves a substantial amount of data collection and analysis.

The Remedial Investigation for the San Fernando Valley Basin will include the collection of information about the natural and artificial features of the groundwater basin through *hydrogeologic* investigations, the installation and testing of new *monitoring wells*, additional sampling of existing water wells, and soil-gas surveys and analyses. Although DWP has been gathering groundwater data regarding the quality of water served to the public, information gained during the Remedial Investigation will provide a more complete picture of the subsurface features of the Basin and will provide a greater understand-

ing of the groundwater contamination. This understanding is essential in order to develop comprehensive cleanup alternatives during the Feasibility Study.

Feasibility Study

Using the information obtained from the Remedial Investigation, EPA will conduct the Feasibility Study to identify potential cleanup alternatives for the site.

Cleanup alternatives will be evaluated and screened based on technical feasibility, reliability, effectiveness, cost and the level of environmental and public health protection offered.

During the Remedial Investigation/Feasibility Study (RI/FS), EPA will also conduct a public health evaluation (*risk assessment*) and enforce against *potentially responsible parties* where appropriate. The public health evaluation will be used to estimate the risk posed to public health by the

Basin's contamination and to develop site cleanup goals designed to protect public health.

Remedy Selection

EPA will evaluate data collected during the RI/FS and recommend a cleanup program in a Proposed Plan. This Proposed Plan and the completed RI/FS report will be distributed to the community for review during a minimum 30-day formal public comment period. During the review and comment period, a community meeting will be held to answer questions and to assist community members with their evaluation and comments. Public comments will be addressed in a *Responsiveness Summary* and considered when selecting a final cleanup strategy. EPA will then select the remedy for the problem. The chosen remedy will be explained in a document called the *Record of Decision*, and the cleanup plan will be designed and implemented.

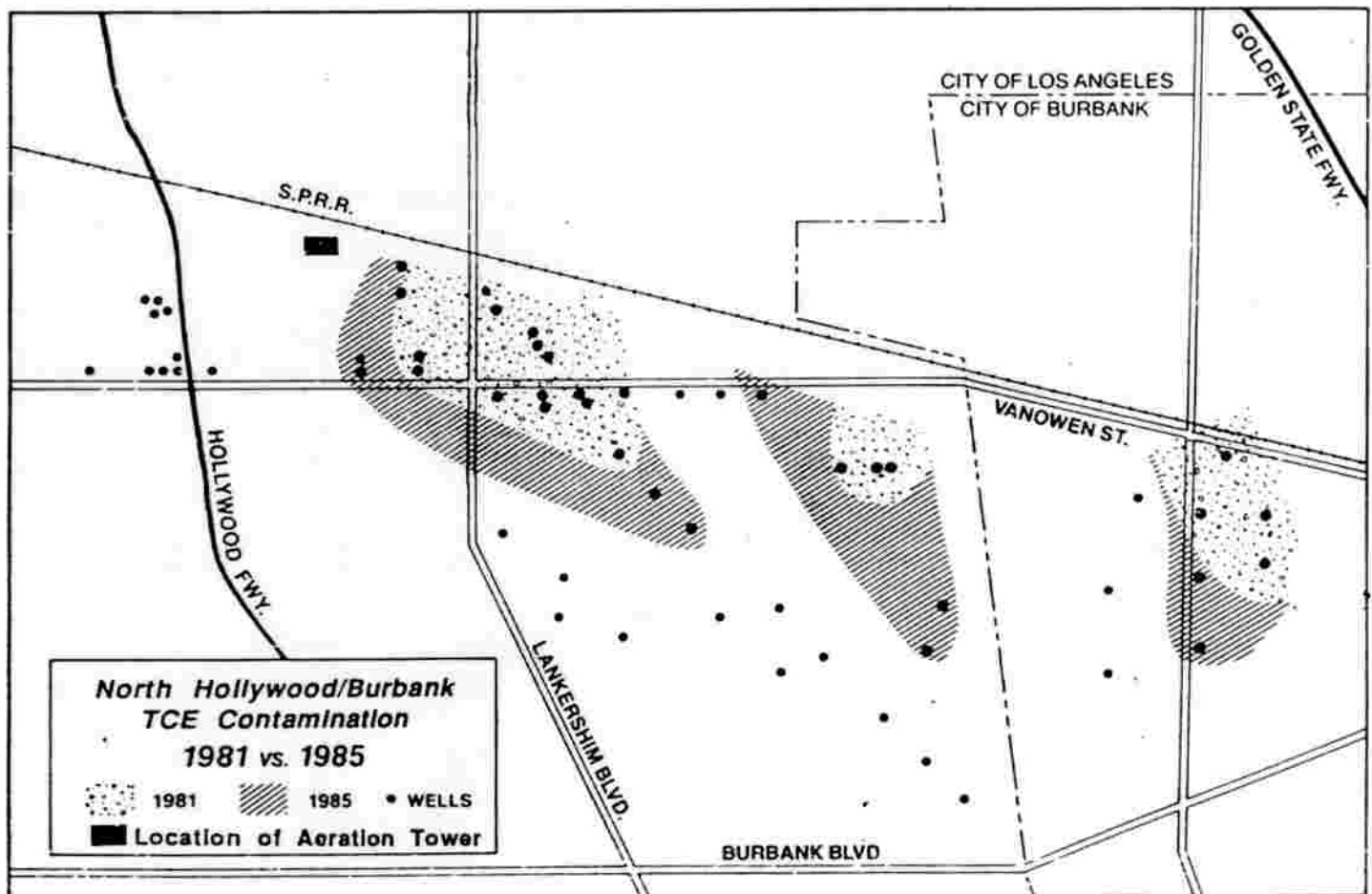
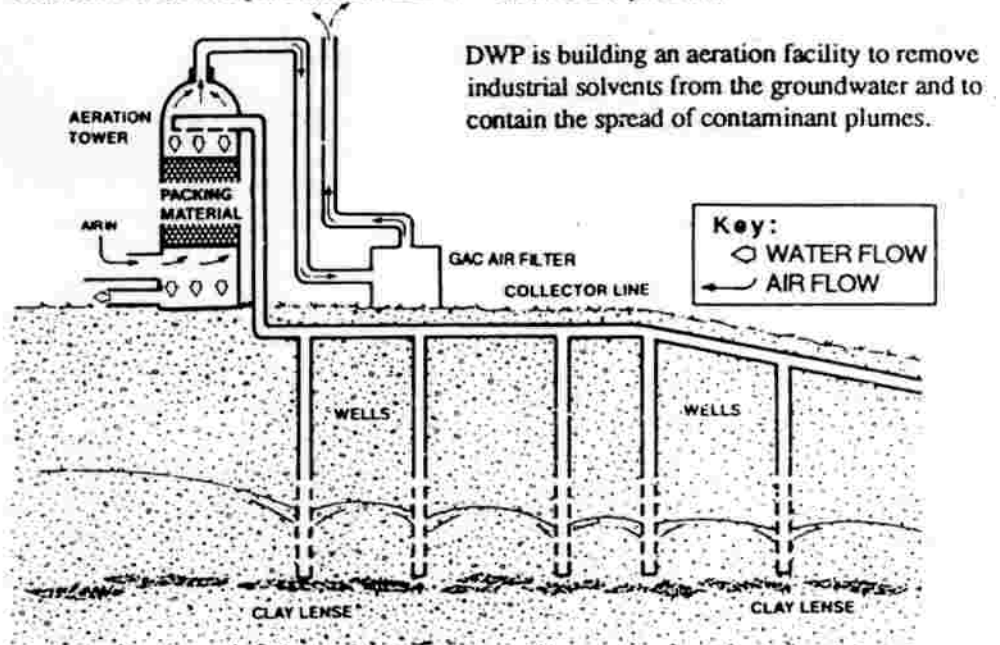
CONSTRUCTION OF A GROUNDWATER TREATMENT SYSTEM IN NORTH HOLLYWOOD/ BURBANK

In September 1987, EPA signed a Record of Decision to construct an *aeration facility, or operable unit*, to treat contaminated groundwater in the North Hollywood/Burbank area. EPA provided funds to DWP through a cooperative agreement to implement this project. Also, EPA has joined with DWP and DHS in a Three Party Agreement that defines specific agency responsibilities, cost sharing, and other applicable provisions for construction, operation, and maintenance of the treatment system.

Below - Contaminant Plumes in the North Hollywood portion of the San Fernando Valley Groundwater Basin continue to spread, threatening the future use of the water source.

The project is designed to halt the rapid spread of contaminants in the groundwater, principally TCE and PCE, by groundwater extraction. The *contaminant plume* has already affected numerous groundwater production wells in the North Hollywood/Burbank area (Superfund AREA I)

and precluded their use for public water supply. Construction and operation of the project is intended to address the immediate problem in AREA I while a more complete investigation of the Valley's overall groundwater problem is being done through the RI/FS process.



Contaminated groundwater will be extracted and conveyed to the aeration facility where water flows through a collector line to the top of a 48-foot high tower (see illustration). As the water falls by gravity through the tower and through packing material, an upward airstream will be passed through the water. The water will then be aerated, transferring the

volatile organic compounds (VOCs) into the air stream through evaporation. The contaminated air stream will then be filtered through a carbon adsorption tank containing *granular activated carbon (GAC)*, a specially treated material that attracts contaminants. Contaminants will cling ("adsorb") to the carbon, leaving the exiting air stream free of contaminants.

Contaminated groundwater will be extracted and treated to meet the Federal Maximum Contaminant Level (MCL) for TCE at 5 ppb and the California State Action Level for PCE at 4 ppb. The treated groundwater will then be conveyed by gravity via an existing pipeline to DWP's North Hollywood Pumping Station for chlorination and distribution into the public water supply.

Community Relations

In March 1985, representatives from EPA and DHS interviewed residents, members of civic, business, and environmental groups, and local officials in Los Angeles County. These interviews helped the agencies define community concerns and develop a plan for communication between the community and the involved agencies. Based on these interviews, EPA prepared a Community Relations Plan (CRP), issued in January 1986. The plan outlines a community relations program intended to inform the public about the Superfund process and to involve community members in government decision-making. The plan proposes the following activities:

- o Issuing periodic fact sheets to provide information about technical progress, community meetings, public comment periods, and environmental sampling results;
- o Establishing information repositories at selected libraries throughout Los Angeles County and placing major work plans, reports and published data in the repositories for public review and comment;
- o Holding periodic community meetings to discuss the investigation and cleanup, to receive formal public comments on proposed cleanup alternatives, and to respond to questions and concerns;
- o Providing presentations on environmental and health issues to schools, community groups and business organizations; and
- o Forming a Community Work Group consisting of interested residents, elected officials, agency representatives, and environmental and business leaders to promote public involvement in the Superfund process.

Community Work Group

Since March 1987, EPA and DWP have met bimonthly with Community Work Group (CWG) members to discuss technical issues and management strategies involving the San Fernando Superfund Project.

The CWG has attracted a number of speakers addressing topics such as groundwater hydrology and risk assessment. In January 1988, EPA sent a survey to CWG members to assess and identify

ways to improve the group's effectiveness. EPA will review the survey results and work with CWG members to shape their role in the decision-making process.

Glossary

ACTION LEVEL Unenforceable water quality standards set by the California Department of Health Services (DHS) at levels to protect public health. For carcinogens in drinking water, state action levels are based upon one-in-one-million cancer risk. This means that a person exposed to that level of contamination throughout his or her lifetime (drinking two liters of water per day for 70 years) has a one-in-one-million chance of contracting cancer as a result of ingesting the contaminant. As an example, the State action levels for trichloroethylene and perchloroethylene are 5 and 4 parts per billion, respectively.

When contaminant levels rise above the State action level, DHS recommends against consuming the water and requests the water supplier to take measures (such as treatment, discontinued use, or blending) to reduce contaminant concentrations in the water.

AERATION FACILITY A treatment system that removes volatile organic compounds from contaminated water by forcing air through the water. The volatile chemicals evaporate upon exposure to the air, leaving the water clean.

AQUIFER An underground rock formation composed of materials such as sand, soil, or gravel that can store and supply ground water to wells and springs. Most aquifers used in the United States are within a thousand feet of the earth's surface.

CONTAMINANT PLUME A three-dimensional zone within the groundwater aquifer containing contaminants that generally move in the direction of, and with groundwater flow.

GRANULAR ACTIVATED CARBON (GAC) An adsorptive material which attracts and holds contaminants. GAC has been demonstrated to be especially effective due to its large adsorption surface area.

GROUNDWATER Underground water that fills pores between particles of soil, sand, and gravel or openings in rocks to the point of saturation. Where groundwater occurs in significant quantity, it can be used as a source of water supply.

HAZARDOUS SUBSTANCE Any material that poses a threat to public health and/or the environment. Typical

hazardous substances are materials that are toxic, corrosive, ignitable, explosive, or chemically reactive.

HYDROGEOLOGY The branch of geology concerned with the way in which surface and underground water is controlled by physical features of deposits and formations (soils and rocks).

MAXIMUM CONTAMINANT LEVEL (MCL) Enforceable Federal standards that are set as close to the *Maximum Contaminant Level Goal* as feasible. MCLs are based on treatment technologies, cost, and analytical methods.

MAXIMUM CONTAMINANT LEVEL GOAL (MCLG) Unenforceable Federal standards based on health goals. MCLGs are set at levels which would result in no known or anticipated adverse health effects with an adequate margin of safety.

MONITORING WELLS Special wells drilled at specific locations on or off a hazardous waste site where groundwater can be sampled at selected depths and studied to determine such things as direction in which groundwater flows and the types and amounts of contaminants present.

NATIONAL PRIORITIES LIST (NPL) A list of the top-priority hazardous waste sites in the country that are eligible for investigation and cleanup under the Superfund program.

OPERABLE UNIT A discrete action taken that contributes to the permanent site cleanup. A number of operable units can be taken in the course of a Superfund project.

PARTS PER BILLION (ppb) Units commonly used to express low concentrations of contaminants. For example, 1 ounce of trichloroethylene (TCE) in 1 billion ounces of water is 1 ppb.

PERCHLOROETHYLENE (PCE) A nonflammable solvent used commonly in dry cleaning and to remove grease from equipment. It is a suspected carcinogen.

POTENTIALLY RESPONSIBLE PARTY (PRP) Any individual(s) or company(ies) (such as owners, operators, transporters, or generators) potentially responsible for, or contributing to, the contamination problems at a Superfund

site. Whenever possible, EPA requires PRPs, through administrative and legal actions, to clean up hazardous waste sites they have contaminated.

RECORD OF DECISION (ROD) A public document that explains which cleanup alternatives will be used at National Priorities List sites. The Record of Decision is based on information and technical analysis generated during the remedial investigation/feasibility study and consideration of public comments and community concerns.

REMEDIAL INVESTIGATION/FEASIBILITY STUDY (RI/FS) A two-part study of a hazardous waste site that must be completed before the site remedy is implemented. The first part, or Remedial Investigation, examines the nature and extent of site contamination. The second part, or Feasibility Study, identifies and evaluates alternatives for addressing site contamination.

RESPONSIVENESS SUMMARY A summary of oral and/or written public comments received by EPA during formal public comment periods on key documents such as the RI/FS report, and EPA's responses to those comments. The responsiveness summary is especially valuable during the Record of Decision phase when it highlights community concerns for EPA decision-makers.

RISK ASSESSMENT An evaluation performed as part of the remedial investigation to assess conditions at a Superfund site and determine the risk posed to public health and/or the environment.

SUPERFUND The common name used for the Comprehensive Environmental Response, Compensation, and Liability Act, as amended by the Superfund Amendments and Reauthorization Act (SARA), also referred to as the Trust Fund.

TRICHLOROETHYLENE (TCE) A nonflammable liquid used commonly as a solvent in dry cleaning and to remove grease from metal. It is a suspected carcinogen.

VOLATILE ORGANIC COMPOUND (VOC) An organic compound (carbon-containing) that evaporates (volatilizes) readily at room temperature.